A further advantage in the x-ray technique is the applicability to opaque minerals and metals, as well as non-opaque minerals, and the use of one net only for all isometric minerals and metals.

The x-ray technique allows study of any crystallographic direction in a mineral, at no extra cost in time, once the net has been constructed. With the U-stage, however, such a direction could be determined in a mineral grain only by laborious construction from considerable optical and crystallographic data (cleavage, twinning, crystal faces, etc.), and this must be repeated for every grain counted. The time needed to obtain a petrofabric diagram this way would be prohibitive.

For rocks too fine grained for optical analysis the x-ray technique (whether the small-circle net method or some other) is the only alternative. But the above discussion applies to relatively coarse-grained rocks as well, and in the writer's opinion the old belief that x-ray analysis must be reserved for very fine grained rocks need not apply to the small-circle net method.

Concerning the relative accuracy of the x-ray diagrams compared to those of optical derivation one can only say that extensive testing and use of the x-ray method will give the answer. From the data collected so far it seems most likely that major features of the diagrams are faithfully portrayed. It is true that minor features are in doubt, but in optical analysis it is common to see the minor features change about in the diagram as each 100 grains is added to the count. Just how many grains are necessary in the U-stage method to reveal correctly the minor features is anyone's guess, but if the minor features of the x-ray diagram are real they represent the best picture available since x-rays do not omit fine grains and are non-selective.

CONCLUSIONS

The small-circle net method appears to represent a general technique for the quantitative evaluation of fabric anisotropy that requires only the use of the x-ray diffractometer and goniometer and does not require special sample preparation or rotation equipment. Moreover, the small-circle net method is applicable with equal ease to all minerals, regardless of symmetry, once the proper net has been constructed. Absorption corrections are eliminated by the geometry of the technique.

Processing of the x-ray data by hand allows reduction of the data to the usual petrofabric diagram in a reasonable length of time, and application of computing techniques to the problem offers a possible means to speed up the process.

Results obtained both petrographically and by use of the x-ray method on quartzite, marble, and dunite tectonites agree in major detail. The technique demonstrates that point maxima, scattered irregular maxima, and girdles can be located precisely by contouring the x-ray data and that strong maxima can be located precisely merely by graphical construction.

Limitations of the technique may permit spurious maxima to appear, but the reality of these may be ascertained by quick inspection of the experimental intensity data.

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